Preface: the 2020 edition of the XXIVth ISPRS congress

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THE 2020 EDITION OF THE XXIVTH ISPRS CONGRESS

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1. INTRODUCTION

We report key elements and figures related to the proceedings of the 2020 edition of the XXIVth ISPRS Congress. The COVID-19 pandemic causes global travel challenges and restrictions for the full year 2020. Consequently, the Congress planned in June 2020 in Nice (France) was postponed to July 2021. Papers were already submitted and the review process was almost complete. Thus, it has been decided to achieve the publication of the proceedings of these papers under the label "*2020 Edition*". The authors of published papers have the opportunity to present their work during a Virtual Event (31 August - 2 September 2020), while the papers of the 2021 edition will be presented during the (physical) Congress in July 2021.

2. KEY ELEMENTS

An International Program Committee (IPC) was established so as to prepare and implement this 2020 edition based on the general descriptions of the reviewing process described in (Mallet et al., 2018), and in the "Review process for ISPRS Archives" guidelines, available on the ISPRS website. The IPC includes the Congress Director, the ISAC Chair, the Program Chairs, the Chair of the ISPRS Student Consortium, Technical Commission Presidents and Vice Presidents (TCP). Guidelines were written early 2019 and approved by the ISPRS Council and the IPC during the ISPRS Geospatial Week (June 2019), in Enschede (The Nederlands).

2.1 Tracks & submission process

Authors had the possibility to submit their work through different tracks:

- Technical Commission tracks (5): one track for each Technical Commission, managed by the TCP and with topics corresponding to the TC Working Groups (WG);
- Youth Forum: managed by the ISPRS Student Consortium;
- Thematical Sessions (19): managed by the organisers of these sessions, either by invitation or open to everyone (more details in Section 2.3).

Same deadlines were decided both for abstracts and full papers (see Section 2.2). The main difference remains the format (2 pages with authors' names VS 6-8 anonymous pages, respectively). It was possible to complement any submission with supplementary material and a short video. The aim was to ease the decision process both for acceptance/rejection and for building the program of the Congress.
The submission and the review processes of each TC were monitored by TC Correspondents (1 for TCI and TC II, 2 for TCIII, 1 for TCIV+V), that were also dedicated to help TCP and WG officers with the Conference Managing System (Conftool).

2.2 Important dates

The main drawback of ISPRS Congresses is the significant time lapse between paper submission and the event. We reduced the global time frame mainly by minimising the reviewing period. This allowed to shift the submission deadline by more than one month without steadily modifying the notification date. As a consequence, authors of accepted abstracts have sufficient time to extend their paper.

- **6 February**: Deadline for abstracts & full papers;
- **2 March**: Notification of authors for abstracts;
- **30 March**: Notification of authors for full papers;
- **4 May**: Deadline for camera ready papers.

Thanks to the involvement of Area Chairs and reviewers, we managed to stick to the schedule.

2.3 Thematical sessions

A novelty was an open call for Thematical Sessions (TS), released in September 2019. The aim was to promote emergent and cross-discipline topics not covered by the 2016-2020 Working Groups. 19 topics were selected among 25 proposals. They are listed in Table 1. Same deadlines and formats applied as for the TC tracks. Several of them only welcomed invited papers. Each TS was linked to a specific TC. Final papers are published on the Volumes corresponding to this TC.

3. THE REVIEW PROCESS

3.1 Organisation

The overall workflow is described in (Mallet et al., 2018). Two options were possible: either TCPs directly handle all papers of their commission (TC I and II), or they decide to involve Area Chairs for reviewer assignment and decision taking (TC III, IV, V and Youth Forum). In such a case, a sub-track was created for each Working Group and Area Chairs were selected among WG officers. Due to their limited number of submissions, Thematic

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Title	**Organiser(s)** (Country/Organisation)	**TC**
AI for Earth Observation & Earth Science	Diego Fernández Prieto (ESA)	II
CIPA	Fulvio Rinaudo (IT)	II
Cultural Heritage	Michal Younan (PS) Bayt Al Handasa (PS)	II
Datacubes for EO and Geosciences	Anca Popescu (ESA)	–
Deep Learning in Remote Sensing	Christian Heipke (ISPRS) Paolo Gamba (IEEE GRSS)	III
Deep learning for Satellite Image Time Series Analysis	Charlotte Pelletier (FR) Marc Russwurm (DE) Marco Körner (DE) Romain Tavenard (FR)	II
Digital twins: Vision papers	Arzu Çöltekin (CH) Chris Pettit (AU) Sidonie Christophe (FR) Victoria Rautenbach (ZA)	IV
EO challenges and opportunities for the SDGs	Marc Paganini (ESA)	IV
EuroSDR/NMCAs	Fabio Remondino (IT) Jon Mills (UK)	V
ISPRS Scientific and Educational & Capacity Building Initiatives	Songnian Li (ISPRS)	V
Learning to Predict Land Cover from Bad Examples	Michael Schmitt (DE) Jan Dirk Wegner (CH)	III
LULC Change Detection and Updating	Ammatzia Peled (IL)	III
News Approaches in Radio Sciences for Disaster Management and Remote Sensing	Tullio Tanzi (FR) Madhu Chandra (DE) Orhan Altan (TR)	III
OGC Standards - Driving Reproducibility of Scientific Workflows	Ingo Simonis (OGC)	–
Polarization Remote Sensing and Photogrammetry	Lei Yan (CN) Ruihua Zhang (CN)	I
Processing of multi-satellite and bi-static SAR constellation data	Timo Balz (CN) Robert Wang (CH)	I
Simulation & Visualization	Sidonie Christophe (FR) Arzu Çöltekin (CH)	IV
Towards Resilient and Ubiquitous Navigation	Dorota Grejner-Brzezinska (US) Allison Kealy (US) Charles Toth (US)	I
Unconventional applications for geo-spatial deep learning	Matthieu Molinier (FI) Devis Tuia (NL)	III

Table 1. Thematical Sessions of the 2020 edition of the ISPRS Congress. OGC session is not related to any TC since no final papers were received after Congress postponement.

Session organisers directly acted as Area Chairs. Consolidation reports were written by TCPs and Area Chairs in order to help the authors improving their paper for the final submission.
In order to preserve the double-blind pee-review process for full papers and to guarantee objectivity in decision taking, we adopted a strategy similar to the 2016 Prague Congress:

- Papers co-authored by TCPs were directly handled by Program Chairs;
- Papers co-authored by Area Chairs were processed by TCPs;
- Papers co-authored by TS organisers were handled by another organiser or by the Program Chairs if there was only one organiser.

The only modification with respect to the initial procedure was the acceptance process for abstracts. The limited material provided for many abstracts (< 1 page) was often not sufficient to guarantee the quality of the final paper. The IPC decided to create a "*Conditionally Accepted*" status for these papers. This let the possibility to reject them if the camera-ready paper did not sufficiently take reviewers' remarks into account.

3.2 Plagiarism detection

All accepted papers were scrutinised by the iThenticate software in order to detect cases of plagiarism. The software provides a full report for each paper. In particular, it computes a *similarity score* by comparing the contribution with iThenticate proprietary database, databases of other content providers, and documents retrieved through standard Internet search. A global similarity score is retrieved by agglomerating individual matching scores. High scores corresponded to strong overlap with preprints or duplicate submissions (same papers submitted both in a Technical Commission track and in a Thematical Session). Medium scores corresponded either to papers matching with their extension in a journal or papers copying/pasting generic description of standard algorithms of the literature from multiple sources (books, papers, lecture materials, etc.).
No case of plagiarism was detected for this 2020 edition.

3.3 Global statistics

1,776 papers were submitted (1,132 abstracts and 644 full papers). 1,629 were conditionally accepted (91.7%) and 1,054 were eventually published (59.3%). This initially corresponds to 532 abstracts (47%) and 522 full papers (80.9%). 716 papers are published in 5 volumes of the ISPRS Archive while 338 are published in the ISPRS Annals (64.9% of the published full papers, 32.1% of the published papers and 19% of the submitted papers).
Due to the Congress postponement, we registered many withdrawals, either officially or unofficially (no upload of camera-ready papers). In total, this corresponds to 541 papers (30.5%, 477 abstracts and 64 full papers).

The papers were submitted by 2,150 authors from 80 countries (Africa: 2.4% - Asia: 43.3% - Europe: 43.3% - North America: 6.4% - Oceania: 1.2% - South America: 3.4%, see Figure 1) with a predominance for Technical Commission III (34%, Figure 2).

Papers were handled by 168 Area Chairs, evaluated by 1,100 reviewers from 64 countries (Africa: 3.5% - Asia: 30.9% -

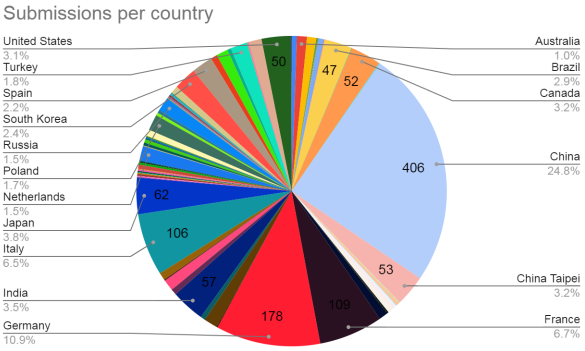

Figure 1. Submitted papers per country.

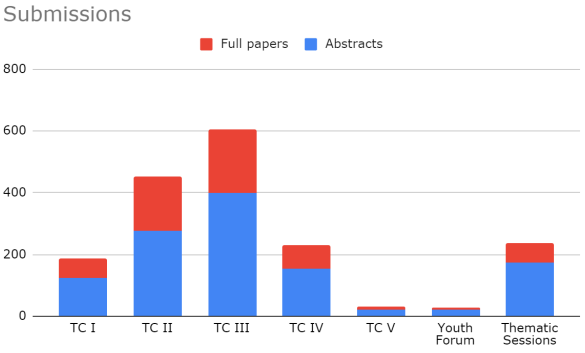

Figure 2. Submitted papers per track.

Europe: 49.4% - North America: 10.1% - Oceania: 3.3% - South America: 2.8%, (Figure 3). 4,034 reviews were provided. We noticed only <4% of missing reviews: emergency reviews were directly performed by TCPs and Area Chairs.

3.4 Detailed statistics

We monitored the amount of submitted papers one month before the deadline. The trend is a standard exponential curve (Figure 4). More surprisingly, the scores (0-100) are not linked at all with the date of submission while it is well known that very early and very late papers are more likely rejected from conferences.

The most popular Working Groups were (Figure 5): *Point Cloud Processing* (II-3, 79 papers), *Thematic Information Extraction* (III-1, 80 papers), and *Agriculture and Natural Ecosystems Modelling and Monitoring* (III-10, 81 papers). In TCI, this corresponds in the InterCommission Working Group on *UAS Small Multi-sensor Platforms: Concepts Applications* (37 papers, with TCII). In TCIV, the topic *Spatial Data Analysis, Statistics and Uncertainty Modelling* (IV-3) collected the maximum number of submissions (48 papers).

The evaluation was based on five main criteria, the same for abstracts and full papers (Mallet et al., 2018). This leads to a score between 0 and 100. This procedure was set up in 2018 and first tested for the ISPRS Geospatial Week 2019. The detailed analysis of these scores shows that these criteria allow to capture the main aspects of a paper. They allow a sufficient coverage of the rating palette (Figure 6). In addition, detailed reviews were provided by most assessors. Very limited reviews mainly corresponded to contributions without papers or to <1 page abstracts.

Track	Abstracts		Full papers			Published papers	
	Submitted	Archives	Submitted	Archives	Annals	% Archives	% Annals
Total	1,132	532	644	184	338	40.3	19
I	120	63	69	13	45	40.2	23.8
II	262	131	191	51	118	40.2	26
III	387	159	216	59	107	36.2	17.7
IV	150	87	80	27	29	49.6	12.6
V	21	12	13	3	10	44.1	29.4
Youth Forum	21	6	8	4	3	34.5	10.3
Thematical Sessions	171	74	67	27	26	42.4	10.9

Table 2. Detailed statistics for each track.

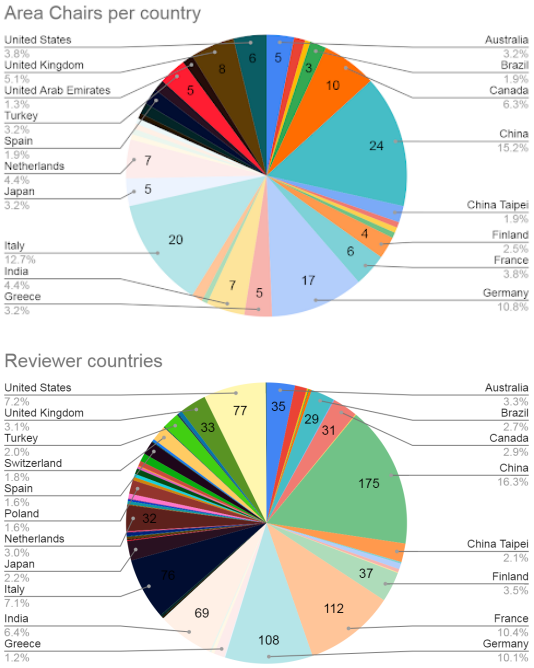

Figure 3. Area Chairs and reviewers per country.

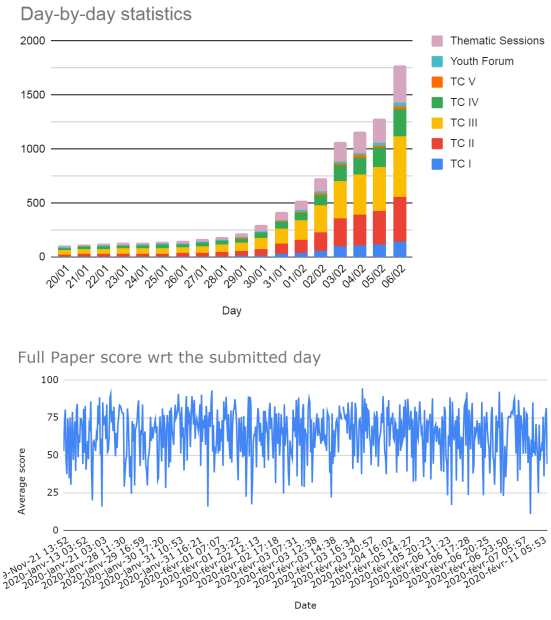

Figure 4. Day-by-day statistics for the submitted papers.

4. YOUNG AUTHOR'S AWARD

Based on the review process, each Technical Commission selected two papers for this award. The awardees are:

TC I: Sensor systems

- Emmanuel Cledat (CH) for "*Camera calibration models and methods in corridor mapping with UAVs*".
- Stefan Blaser (CH) for "*Centimetre-accuracy in forests and urban canyons – combining a high-performance image-based mobile mapping backpack with new georeferencing methods*".

TC II: Photogrammetry

- Dennis Wittich (DE) for "*Deep domain adaptation by weighted entropy minimization for the classification of aerial images*".
- Eleonora Maset (IT) for "*Bundle Block Adjustment with Constrained Relative Orientations*".

TC III: Remote Sensing

- Rory Clifford Pittman (CA) for "*Estimation of soil bulk density and carbon using multi-source remotely sensed data*".
- Jiangyuan Zeng (CN) for "*Development and validation of a new passive microwave based soil moisture index*".

TC IV: Spatial Information Science

- Patrick Hübner (DE) for "*Voxel-based indoor reconstruction from hololens triangle meshes*".
- Xiaoli Li (CN) for "*Region-based fuzzy clustering image segmentation algorithm with Kullback-Leibler distance*".

TC V: Education and Outreach

- Priyanka Singh (IND) for "*Maximum entropy modelling using citizen science: use case on Jacobin cuckoo as an indicator of Indian monsoon*".
- Recep Can (TR) for "*Development of a CitSci and artificial intelligence supported GIS platform for landslide data collection*".

REFERENCES

Mallet, C., Dowman, I., Vosselman, G., Stilla, U., Halounova, L., Paparoditis, N., 2018. The Review Process for ISPRS Events. *ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences*, IV-5, 53–58. https://www.isprs-ann-photogramm-remote-sens-spatial-inf-sci.net/IV-5/53/2018/.

Figure 5. Submitted papers per Working Group.

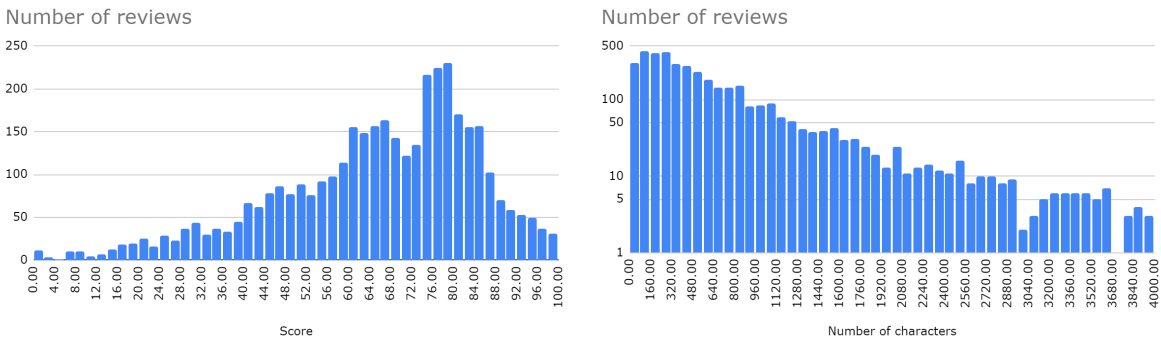

Figure 6. Detailed analysis of the reviews.

Figure 7. Word cloud based on the keywords of the submitted papers.